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EXAMINER	
HOPKINS, ROBERT A	
ART UNIT	PAPER NUMBER
1724	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	**Application No.** 10/684,608	**Applicant(s)** LOCKWOOD ET AL.
	Examiner Robert A. Hopkins	**Art Unit** 1724

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 May 2005*.
2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.
3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-47* is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5)☐ Claim(s) _____ is/are allowed.
6)☒ Claim(s) *1-47* is/are rejected.
7)☐ Claim(s) _____ is/are objected to.
8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.
10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a)☐ All b)☐ Some * c)☐ None of:
1.☐ Certified copies of the priority documents have been received.
2.☐ Certified copies of the priority documents have been received in Application No. _____.
3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *7-6-04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

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DETAILED ACTION

Election/Restrictions

Examiner acknowledges cancellation of claims 48-60 in the response filed 5-4-05, thereby electing claims 1-47 for prosecution.

Claim Objections

Claims 31-38 and 40-47 are objected to because of the following informalities: Claims 31-38 and 40-47 recite "the composition" in the preamble. Claims 30 and 39 recite "a solid ion exchange material" and " a liquid ion exchange material" respectively. Examiner respectfully requests that claims 31-38 and 40-47 include the same preamble as their respective independent claims.

Claim Rejections - 35 USC § 112

Claims 18-29 are rejected under 35 U.S.C. 112, first paragraph, as based on a disclosure which is not enabling. A step of separating a solid fraction from the treated slurry and washing the solid fraction to produce a solid ion exchange material is critical or essential to the practice of the invention, but not included in the claim 18. See *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976). Examiner notes that the preamble of claim 18 is to a process for producing an ion exchange material. However claim 18 as stated only produces a slurry. The ion exchange material is only produced after separating the solid fraction from the slurry. After the separation of the solid fraction and washing of the solid fraction, a solid ion exchange material is produced, and also a liquid ion exchange material is produced. A mixture can also be produced, however the mixture is produced by adding the separated and washed solid fraction and the liquid fraction. Correction is requested. Claims 19-29 depend on claim 18 and hence are also rejected.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4,10,11-17 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Sanders et al(4623529).

Sanders et al teaches a method for removing heavy metals or radionuclides from an aqueous solution(wastewater; column 3 lines 22-23) comprising contacting the aqueous solution with an ion exchange material, wherein the ion exchange material is a modified clinoptiloite.

Examiner notes claim 1 is a method of removing heavy metals or radionuclides from an aqueous solution using an ion exchange material, wherein the ion exchange material is claimed as being made by a specific process. Examiner notes example 1 in column 5 recites combining natural clinoptiloite with sodium aluminate, then mixing the powder with an alkaline solution and heating at 140 degrees celsius for 72 hours, then filtering the product. Examiner notes that sodium aluminate and amorphous silica do not seem to change the properties of the modified clinoptiloite, and are seemingly used to help form a paste or slurry to be later heated and filtered. Also, Sanders et al does not explicitly disclose what happens to the liquid fraction of the slurry after the filtration step, however, if the filtration is by standard filtration methods conducted within a vessel, the liquid fraction is retained in the vessel after removal of the product. Examiner also notes that Sanders et al does not specifically disclose washing the solid product after filtration, however washing is common step performed after a filtration process to remove various impurities from the product. Therefore, because part of claim 1 is in essence a product by process limitation, the claim is dependant on the product and not the exact process of making the product.

Sanders et al further teaches wherein the ion exchange material is solid ion exchange material.

Sanders et al discloses all of the limitations of claim 3 but is silent as to wherein an aqueous solution containing heavy metals and radionuclides is passed through a bed or column containing the solid ion exchange material. Examiner notes that ion exchange in a bed or column is very common, therefore it would have been obvious to someone of ordinary skill in the art at the time of the invention to form the solid ion exchange material of Sanders et al in to a bed or column in order to provide a structured form for passing the wastewater through the ion exchange material.

Claim 18,22,23,25-28 is rejected under 35 U.S.C. 102(b) as being clearly anticipated by Sanders et al(4623529).

Sanders et al teaches a process for producing an ion exchange material useful for removing heavy metals or radionuclides from an aqueous solution comprising contacting clinoptilolite with an alkaline solution(sodium hydroxide) at a temperature of about 85 degrees C to about 300 degrees C and for a sufficient time to form a treated slurry wherein the ion exchange material includes a solid fraction and a liquid fraction. Sanders et al further discloses wherein the contacting step is conducted under a pressure greater than ambient pressure. Sanders et al further discloses wherein the alkaline solution has a concentration greater than about 0.5 M. Sanders et al further discloses wherein the ratio of clinoptilolite to alkaline solution in the slurry is about 5 to 50 grams clinoptilolite per 100ml of alkaline solution. Sanders et al further teaches wherein the alkaline compound in the alkaline solution is sodium hydroxide.

Claims 30-38 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Sanders et al(4623529).

Sanders et al teaches a solid ion exchange material for removing heavy metals or radionuclides from an aqueous solution, wherein the solid ion exchange material is a modified clinoptiloite.

Examiner notes example 1 in column 5 recites combining natural clinoptiloite with sodium aluminate, then mixing the powder with an alkaline solution and heating at 140 degrees celsius for 72 hours, then filtering the product. Examiner notes that sodium aluminate and amorphous silica do not seem to change the properties of the modified clinoptiloite, and are seemingly used to help form a paste or slurry to be later heated and filtered. Examiner also notes that Sanders et al does not specifically disclose washing the solid product after filtration, however washing is common step performed after a filtration process to remove various impurities from the product. . Therefore, because claim 30 is a product by process claim, the patentability of the claim is dependant on the product and not the exact process of making the product.

Claims 39-47 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Sanders et al(4623529).

Sanders et al teaches a liquid ion exchange material for removing heavy metals or radionuclides from an aqueous solution, wherein the liquid ion exchange material is a modified clinoptiloite.

Examiner notes example 1 in column 5 recites combining natural clinoptiloite with sodium aluminate, then mixing the powder with an alkaline solution and heating at 140 degrees celsius for 72 hours, then filtering the product. Examiner notes that sodium aluminate and amorphous silica do not seem to change the properties of the modified clinoptiloite, and are seemingly used to help form a paste or slurry to be later heated and filtered. Examiner also notes that Sanders et al does not disclose specifically using the liquid portion for removing heavy metals from an aqueous solution, however Sanders et al does disclose separating a solid ion exchange material by filtration, therefore a liquid ion exchange material having a modified clinoptiloite form is produced, and although the liquid ion exchange material is not used for further separation steps, claim 39 is to a product which is produced. Also, as in claim 30, claim 39 is a product by process claim , therefore the patentability of the claim is dependant on the product and not the exact process of making the product.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 19,24,29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sanders et al(4623529).

Sanders et al further teaches separating the solid fraction from the treated slurry , and recovering the liquid fraction of the treated slurry. Sanders et al is silent as to washing the solid fraction to produce a solid ion exchange material. Examiner respectfully submits that washing is a common step performed after a filtration process to remove various impurities from the product. Therefore, it would have been obvious to someone of ordinary skill in the art at the time of the invention to include a step of washing the separated solid fraction of Sanders et al to remove various impurities from the product.

Sanders et al discloses all of the limitations of claim 24 but is silent as to wherein step(a) is conducted at a temperature of about 100 degrees C to about 125 degrees C. Examiner notes that the contacting step in Example I of Sanders et al is conducted at a temperature of 140 degrees C. Examiner respectfully submits that the properties of the slurry at 140 degrees C would not be substantially different than the properties of the slurry at 125. Examiner also notes on column 4 lines 38-39 that the preferred heating temperature range is from 120-175 degrees C. Therefore, it would have been obvious to someone of ordinary skill in the art at the time of the invention to optimize the temperature range to between 100 degrees C and 125 degrees C to produce a slurry having the optimal properties for ion exchange.

Sanders et al discloses all of the limitations of claim 29 but is silent as to wherein the contacting time of step (a) is about 30 minutes to about 4 hours. Sanders et al discloses a contact time of 72 hours in Example I, however in column 4 lines 37-38, Sanders et al discloses the contact time may be from 1 hour to 240 hours. It would have been obvious to someone of ordinary skill in the art at the time of the invention to optimize the contact time to between 3 minutes and 4 hours to produce a slurry having the optimal properties for ion exchange.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Herden et al(5659110) teaches a process for purifying exhaust gases including heavy metals such as mercury, by passing the exhaust gases through a mixture of naturally occurring zeolites including 60-70 wt % clinoptiloite.

Allowable Subject Matter

Claims 5-9,20,21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 5 recites "wherein said ion exchange material is said liquid ion exchange material". Sanders et al teaches wherein the ion exchange material is the solid ion exchange material. It would not have been obvious to someone of ordinary skill in the art at the time of the invention to substitute use of the liquid ion exchange material for the solid ion exchange material because Sanders et al does not suggest such a modification. Claims 6-8 depend on claim 5 and hence would also be allowable upon incorporation of claim 5 into claim 1.

Claim 9 recites "wherein said ion exchange material is a mixture of said solid ion exchange material and said liquid ion exchange material". Sanders et al teaches wherein the ion exchange material is the solid ion exchange material. It would not have been obvious to someone of ordinary skill in the art at the time of the invention to substitute use of a mixture of the solid ion exchange material and liquid ion exchange material for the solid ion exchange material because Sanders et al does not suggest such a modification.

Claim 20 recites "wherein a mixture of said solid ion exchange material and said liquid ion exchange material is prepared by mixing said solid ion exchange material of step (b) with said liquid ion exchange material of step (c)". Sanders et al discloses separating the solid ion exchange material from the slurry to be used as a final product.

It would not have been obvious to someone of ordinary skill in the art at the time of the invention to mix the separated and washed solid ion exchange material with the liquid ion exchange material because Sanders et al does not suggest such a modification. Claim 21 depends on claim 20 and hence would also be allowable upon incorporation of claims 20 and 19 into claim 18.

Double Patenting

A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

Claims 1-17 are rejected under 35 U.S.C. 101 as claiming the same invention as that of claim 5 of prior U.S. Patent No. 6,827,859. This is a double patenting rejection.

Examiner notes claim 1 of the current application and claim 1 of U.S. Patent No. 6,827,859 claim the same method for removing heavy metals or radionuclides from an aqueous solution, with the exception that claim 1 of U.S. Patent No. 6,827,859 includes the limitation “wherein said ion exchange material is said liquid ion exchange material”. Examiner notes however that claim 1 of the current application and claim 1 of U.S. Patent No. 6,827,859 recite the limitation “an ion exchange material selected from a solid ion exchange material, a liquid ion exchange material, or mixtures thereof”.

Therefore, the specific limitation in claim 1 of U.S. Patent No. 6,827,859 is included in and encompassed by claim 1 of the current application, and therefore claim 1 of the current application does not patentably define over claim 1 of U.S. Patent No. 6,827,859. Claims 2-17 depend on claim 1 and hence are also rejected.

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 18-29 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 6 of U.S. Patent No. 6,827,859. Although the conflicting claims are not identical, they are not patentably distinct from each other because claim 18 is fully encompassed by the limitations of claim 6 of U.S. Patent No. 6,827,859.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert A. Hopkins whose telephone number is 571-272-1159. The examiner can normally be reached on Monday-Friday, 7am-4pm, alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duane Smith can be reached on 571-272-1166. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ROBERT A. HOPKINS
PRIMARY EXAMINER
A.U. 1724

Rah
May 25 ,2005